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IDENTIFYING GLOBAL WARMING THROUGH TEMPERATURE CHANGES (1961-2019)

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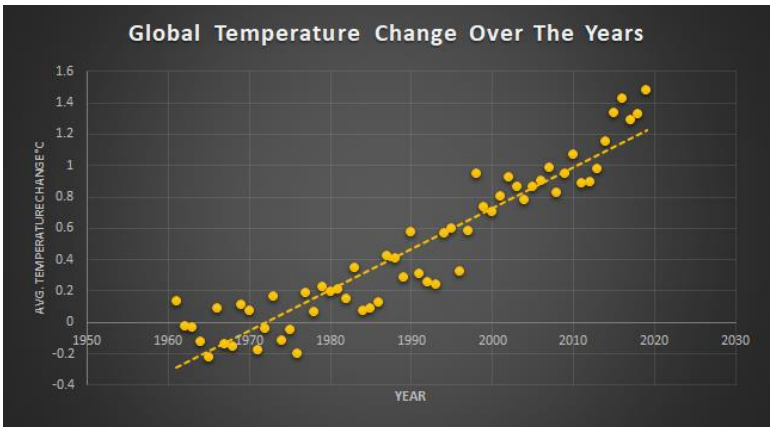
IDENTIFYING RISE IN GLOBAL WARMING THROUGH TEMPERATURE CHANGES (1961-2019)

Heat waves, floods, droughts, extreme weather conditions, loss of animal species and extinction, fires, rising sea levels, decreasing oxygen levels, poverty and the spread of vector-borne diseases among humans are all adverse effects of global warming. Global warming refers to the exceptionally rapid rise in the Earth's average surface temperature during the last century, owing mostly to greenhouse gases created by burning fossil fuels and negligent human activities. Through a deep study of environmental changes over a period of 58 years (1961-2019), a strong trend of increase in mean temperature change was observed.



The future trend and predicted temperature value was estimated through Regression Analysis, and it was found that the average temperature change was expected to rise to about 2℃ by 2050! The UN has warmed against the rising temperature which has potential of great destruction of Earth.

In Figure 1 the statistics show the surface temperature changes (℃) over the worldwide area, distributed by the countries and regions throughout the period 1961-2019.

Despite being a part of the **United Nations Framework Convention on Climate Change** (**UNFCCC**) and taking steps to limit the increase in global average temperature, the Annex Countries being industrialized countries and economies in transition, show a warmer pattern throughout. It is a result of greater percentage carbon emissions in the atmosphere by these countries.

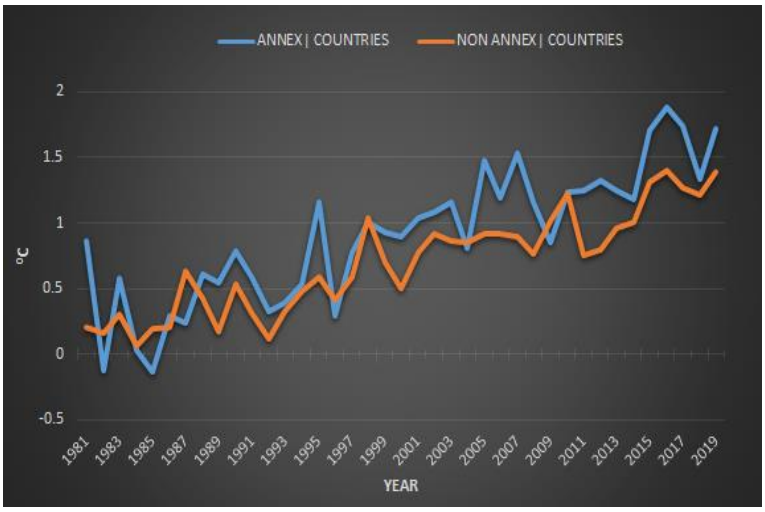


Figure 2 illustrates comparison between average temperature changes in Annex and Non Annex Countries

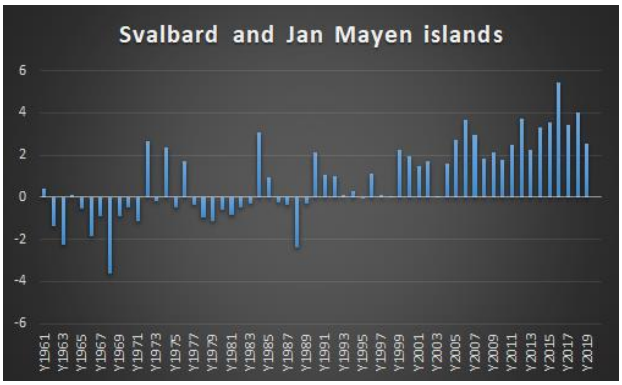


Figure 3 Svalbard and Jan Mayen Islands

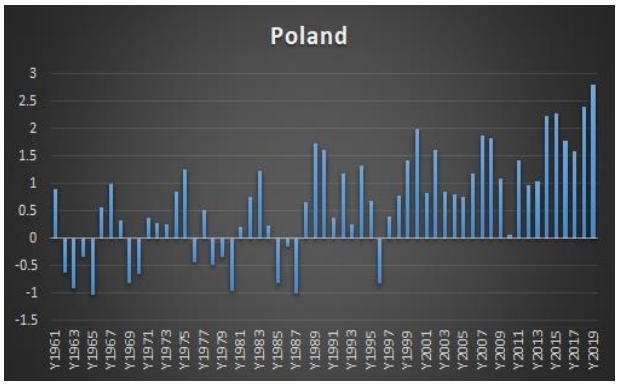
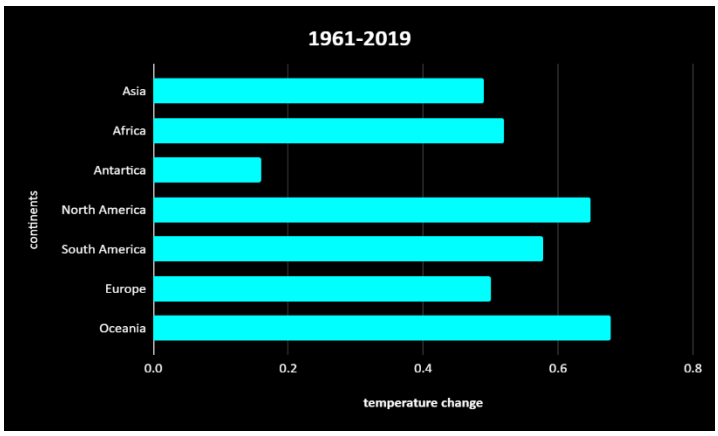


Figure 4 Poland

The largest change in average temperature was observed in Svalbard and Jan Mayen Islands in 2015 5.45℃ above the 1951–1980 climate normal. While in 2019, Poland was the warmest country with a 2.6℃ warmer temperature above global average.



Overall, Oceania is observed to be the worst in terms of change due to which fire damages and extreme storm occurrences are more likely to cause urban drainage and sewage failures. While, Asia stands out in many respects as being most exposed to the physical climate change risk than any other parts of the world. It was observed that Africa is most vulnerable to climate change due to which agricultural production and food security will be compromised.

Figure 5 Continents Avg. Temp. Change

In North America, the tremendous increase in temperature over the years has anticipated to put more strain on coastal communities and environment, worsening the effects of development and pollution. Due to rapid increase in temperature in South America, rise in sea level will increase the risk of flooding and coastal-erosion in low-lying areas. Though second minimum average change in temperature is observed in Europe, still the impacts of temperature change such as heat-wave effects, retreating glaciers and endangered ecosystems have been documented in Europe. Antarctica, being least populated, with least CO2 emissions has least temperature change above the 1951–1980 global average.

The predicted rise in temperature would be 0.5-1.5℃ in 2020 and 0.88-3.6℃ in 2050. This long-term continuous upward trend in average temperature change is alarming for all of humanity and the ecosystem, so we must take steps to prevent the rising global warming.

How to be more eco-friendly in everyday life?

- Recycling plastic
- Plant more trees
- Drive less, drive smart
- Use lesser heat and air-conditioning
- Buy energy-efficient products
- Replace regular light bulbs with compact fluorescent light (CFL) bulbs.
- Save electricity, save energy